

Remarks

The Applicant respectfully requests reconsideration and reexamination of the above-identified patent application, as amended. Claims 1-42 are pending in this application upon entry of this Amendment. In this Amendment, the Applicant has amended claims 1, 15, 29, and 33. No claims have been cancelled or added in this Amendment. Of the pending claims, claims 1, 15, 29, and 33 are independent claims.

Claim Rejections -35 U.S.C. § 102

In the Office Action mailed June 14, 2006, the Examiner rejected claims 1, 14-15, 28-29, 33, and 42 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,477,627 issued to Ofek ("Ofek"). The Applicant respectfully submits that claims 1, 14-15, 28-29, 33, and 42 presented herein are patentable over Ofek.

1. Amended Independent Claim 1

Amended independent claim 1, which is representative of amended independent claims 15, 29, and 33 for purposes of distinguishing over Ofek, recites a method for synchronizing transactions. The method includes specifying an adjustable synchronicity setting indicative of an acceptable amount of lag for a second computing entity to lag behind a first computing entity in executing commands. A level of lag between the computing entities is controlled by executing commands at the first computing entity until the synchronicity setting is reached. The commands executed at the first entity are relayed to the second entity for the second entity to execute. The method further includes postponing executing additional commands at the first entity and postponing relaying the additional commands to the second entity while the synchronicity setting is reached until the second entity has executed at least some of the relayed commands and lags behind the first entity by an amount of lag that is no greater than the synchronicity setting.

2. Ofek

Ofek discloses local and remote storage operable in either a normal mode or an alternate mode to maintain synchronicity with one another. In the normal mode, the local and remote storage operate in near synchronism or in synchronism. In general, in the normal mode, the local storage waits for receipt of an acknowledgment from the remote storage indicative of the local and remote storage being in synchronicity for a given storage operation before further storage operations are conducted. (See, for example, the abstract and col. 5, line 36 through col. 8, line 41 of Ofek.)

In an alternate mode, the local and remote storage operate asynchronously such that the remote storage remains as current to the local storage within a maximum number of pending write requests for the remote storage. The maximum number of pending write requests is indicative of the amount by which the local and remote storage can be out of synchronism while operating in the alternate mode. (See, for example, the abstract and col. 8, line 42 through col. 9, line 57 of Ofek.)

Ofek discloses operating the local and remote storage in either the normal operating mode or in the alternate mode as a function of the number of pending write requests. The local and remote storage operate in the alternate mode while the number of pending write requests for the remote storage is below the maximum number. The local and remote storage operate in the normal mode while the number of pending write requests for the remote storage is above the maximum number. (See, for example, col. 6, lines 22-27 of Ofek.)

Ofek discloses that upon the number of pending write requests for the remote storage being greater than the maximum number while the local and remote storage are operating in the alternate operating mode, the operating mode of the local and remote storage is changed from the alternate operating mode back to the normal operating mode. (See, for example, col. 8, lines 45-61 of Ofek.)

3. Amended Independent Claim 1 Compared to Ofek

Amended independent claim 1 differs from Ofek in that a level of lag between first and second computing entities is controlled by executing commands at the first entity until a synchronicity setting indicative of an acceptable amount of lag for the second entity to lag behind the first entity in executing commands is reached and, while the synchronicity setting is reached, steps of executing additional commands at the first entity and relaying the additional commands to the second entity are postponed until the second entity has executed some of the relayed commands and lags behind the first entity by an amount of lag no greater than the synchronicity setting.

Assuming for comparison with Ofek that the commands are write requests and that the synchronicity setting is indicative of a maximum number of write requests executed by the first entity and which are pending for the second entity to execute, amended independent claim 1 recites that the first entity postpones executing additional write requests until the second entity has executed some of the pending write requests and lags behind the first entity by a number of pending write requests less than the maximum number. Likewise, amended independent claim 1 recites that the first entity executes write requests up to the maximum number of write requests and does not execute additional write requests while the set of write requests executed by the first entity are pending for the second entity to execute.

In contrast, Ofek discloses that the local storage (i.e., the first entity) and the remote storage (i.e., the second entity) may be in a state in which the remote storage lags behind the local storage in executing write requests by an amount of pending write requests greater than the maximum number (i.e., Ofek discloses that the second entity may lag behind the first entity by an amount of lag greater than the synchronicity setting). (See, for example, for example, col. 6, lines 22-27 and col. 8, lines 45-61 of Ofek.) For this situation in which the number of pending write requests for the remote storage (i.e., the second entity) is greater than the maximum number (i.e., the synchronicity setting) to occur, the local storage (i.e., the

first entity) has to have executed a number of write requests greater than the maximum number before the remote storage has executed any of the write requests executed by the first entity.

In amended independent claim 1, the situation in which the number of pending write requests for the second entity is greater than the synchronicity setting does not occur in amended independent claim 1 as the first entity postpones executing additional write requests while the synchronicity setting is reached (i.e., while the number of pending write requests for the second entity matches the maximum number). This ensures that at all times the second entity lags behind the first entity in executing write requests up to a maximum number of pending write requests. In contrast, the system of Ofek is configured such that the remote storage (i.e., the second entity) will sometimes lag the local storage (i.e., the first entity) in executing write requests more than a maximum number of pending write requests. As such, Ofek does not teach or suggest providing an adjustable level of synchronicity between duplicated transactions as claimed.

In view of the foregoing amendments and remarks, amended independent claims 1, 15, 29, and 33 are patentable over Ofek. Claims 14 and 28 respectively depend from amended independent claims 1 and 15 and include the limitations of their respective independent claim. Thus, the Applicant respectfully requests reconsideration and withdraw of the rejection to claims 1, 14-15, 28-29, 33, and 42 under 35 U.S.C. § 102(e).

Claim Rejections - 35 U.S.C. § 103

The Examiner rejected claims 2-13, 16-27, 30-32, and 34-41 under 35 U.S.C. § 103(a) as being unpatentable over Ofek as applied to claims 1, 15, 29, and 33 above. Claims 2-13, 16-27, 30-32, and 34-41 depend from one of amended independent claims 1, 15, 29, and 33 and include the limitations of their respective independent claim. Thus, the Applicant respectfully requests reconsideration and withdraw of the rejection to claims 2-13, 16-27, 30-32, and 34-41 under 35 U.S.C. § 103(a).

CONCLUSION

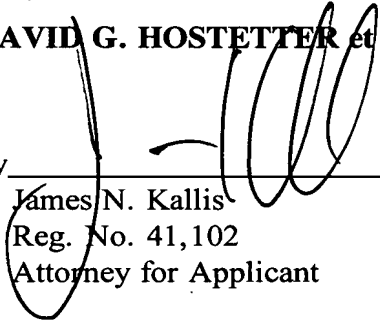
In summary, claims 1-42 as presented herein meet the substantive requirements for patentability. The case is in appropriate condition for allowance. Accordingly, such action is respectfully requested.

If a telephone or video conference would expedite allowance or resolve any further questions, such a conference is invited at the convenience of the Examiner.

Respectfully submitted,

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